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The present paper purports to be the sequel of a work, already published by the author, on the subject of the education of animals. It is the first part only of the paper which is here presented, and contains preliminary observations on the nature of the inquiries which the author proposes to enter into in the subsequent parts. It is divided into three chapters; the first comprising some general remarks on the objects to be attained in the education of animals, and some criticisms on the opinions of preceding writers relating to the subject; the second treating principally of Instinct and its characteristic features, as contrasted with Intelligence and Reason; and the third entering into various metaphysical disquisitions on the nature and peculiar sphere of action of the different intellectual faculties, both those which are common to man and the lower animals, and those which are peculiar to the former.

June 13, 1844.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

1. "On the Action of the Sun's Rays on Lithic Acid." By John Davy, M.D., F.R.S. Lond. and Edinb.

The author, after adverting to the composition of guano, and remarking that its nitrogenous part differs from the urine of the sea-fowl, from which it is derived, chiefly in containing little or no lithate of ammonia, but a large proportion of the oxalate, describes an experiment made for the purpose of determining whether the oxalic acid existing in guano may not be formed from the lithic acid of the urine, in consequence of the operation of the sun's rays. The result of a comparative trial made with the urine of the white-headed Sea-Eagle, in one instance kept in darkness, in the other exposed to bright sunshine for many successive days, afforded an answer in the affirmative. Whilst the urine of the Sea-Eagle, consisting chiefly of lithate of ammonia, kept in the dark, underwent no change, that exposed to light was materially changed, most of the lithate of ammonia had disappeared, its place was supplied by oxalate of ammonia, the peculiar odour of guano was acquired, and in part its brownish hue.

From considering the composition of the lithic and oxalic acids, the author infers, that in the conversion of the one into the other, oxygen is absorbed; and, in confirmation, he mentions that although no change takes place when moist lithate of ammonia is exposed alone to a temperature of about 212° , it is otherwise if so treated when mixed with black oxide of manganese, in which case oxalate of ammonia is formed, and also some brown colouring matter, not unlike that of guano; and this colouring matter, he supposes, may appropriate to itself the excess of carbon and hydrogen, that is, such proportions of these substances in the lithic acid as are more than those required to form oxalic acid and ammonia.

Having always found in the South American guano more distinct traces of lithate of ammonia than in the African, he inquires whether the difference may not be owing to different states of atmosphere in the two regions;—in the one, the clouded state of the air impeding the sun's rays; in the other, the usually unclouded state interposing no obstacle to their full effect. He inquires too, whether the circumstance of the comparatively rapid conversion of lithic acid into the oxalic under the influence of light, as witnessed in the experiment detailed, may not account for even recently formed guano being destitute of lithate of ammonia; and he mentions an example in point, namely, a specimen he had received from the island of Ichabor being found with a large quantity of oxalate of ammonia, to contain no lithate of ammonia,—a specimen described as “having been scraped off a rock, where it was in a thin layer, and much exposed to the sun.”

2. “An Account of the Newtonian Dial presented to the Royal Society, in a letter to the President.” By the Rev. Charles Turnor, F.R.S.

The dial here described was taken down in the early part of the present year from the south wall of the Manor-house of Wools-thorpe, a hamlet to Colsterworth in the county of Lincoln, the birth-place of Newton. It was marked on a large stone at the angle of the building, and about six feet from the ground. The name of NEWTON, with the exception of the first two letters, which have been obliterated, are inscribed under the dial in wide and capital letters. The gnomon has disappeared many years ago.

3. “On the Non-coincidence of the Focus of the Photogenic Rays with that of the Visual Rays of the Solar Spectrum.” By M. A. Claudet. Communicated by S. Hunter Christie, Esq., Sec. R.S., &c.

After detailing the difficulties he had met with in obtaining perfect pictures when a lens, accurately corrected for spherical and chromatic aberration, was employed in the Daguerreotype process, the author states that in order to obtain a clear and well-defined image of any object on the Daguerreotype plate, he generally found it necessary to adjust the focus on the ground glass by another object brought considerably nearer to the camera than the object whose picture was required. When this adjustment is made, he proceeds to apply the principle practically to the taking of portraits. He finds that in achromatic object-glasses the focus of photogenic action is not coincident with the visual focus; and the distance between these two foci varies according to the nature of the combination of the glasses, to their different dispersive powers, and to the degree of intensity of the light. By attention to these circumstances in accurately adjusting the Daguerreotype plate to the situation of the focus of the photogenic rays, the author has succeeded in obtaining the most perfect delineations of objects.

4. “Observations on some of the Nebulæ.” By the Earl of Rosse, F.R.S.